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Three new hyphomycetes from southern China

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Abstract — Three new hyphomycetes were collected from dead branches from tropical and subtropical forests in southern China: *Ellisembia schimae* from *Schima superba*, *Linkosia hibisci* from *Hibiscus mutabilis*, and *Stanjehughesia micheliae* from *Michelia skinneriana.* The new species are described, illustrated, and compared with similar species.

Key words — anamorphic fungi, taxonomy

Introduction

The mycota of tropical and subtropical forests of southern China is very rich in wood-inhabiting fungi (Ma et al. 2008, Dai et al. 2009, Dai & Li 2010, Zhang et al. 2009a). During ongoing mycological surveys in these forests, three hyphomycetes with morphological features typical of *Ellisembia* Subram., *Stanjehughesia* Subram. (Subramanian 1992), and *Linkosia* A. Hern. Gut. & B. Sutton (Hernández-Gutiérrez & Sutton 1997) were collected on dead branches. However, these collections differ significantly from the currently accepted species of these genera, and are therefore proposed as new taxa. The specimens are deposited in the Herbarium of Shandong Agricultural University, Plant Pathology (HSAUP) and the Mycological Herbarium, Institute of Microbiology, Chinese Academy of Sciences (HMAS).

Taxonomy

Ellisembia schimae Jian Ma & X.G. Zhang, **sp. nov.** Fig. 1

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Fungus anamorphicus. Coloniae in substrato naturali effusae, brunneae vel atrobrunneae, pilosae. Mycelium partim superficiale, partim immersum in substrato, ex hyphis ramosis, septatis, pallide brunneis, laevibus, 1.5–3 µm crassis compositum. Conidiophora macronemata, mononematica, singula vel fasciculata, erecta, nonramosa, recta vel flexuosa, cylindrica, atrobrunnea vel nigra, laevia, septata, 16–39 × 6.5–9 µm. Cellulae conidiogenae monoblasticae, integratae, terminales, determinatae, lageniformes

Fig. 1. *Ellisembia schimae*.
A. Conidiophores with conidia. B. Conidiophores. C–D. Conidia.

vel cylindricae, brunneae vel atrobrunneae, laeves. Conidiorum secessio schizolytica. Conidia *holoblastica, solitaria, acrogena, recta vel curvata, obclavata, laevia, brunnea vel atrobrunnea, 14–21-distoseptata, 122–155 μm longa, 4.5–6.5 μm crassa, apicem acutum gradatim versus attenuata, basi truncata 3.5–4.5 μm lata.*

Type: China, Guangdong Province: Liuxihe National Forest Park, on dead branches of *Schima superba* Gardn. & Champ. (*Theaceae*), 16 Oct 2010, J. Ma, (**holotype** HSAUP H5380−2; isotype HMAS146141).

Etymology: in reference to the host genus, *Schima*.

Anamorphic fungi. Colonies on natural substrate effuse, brown to dark brown, hairy. Mycelium partly superficial, partly immersed, composed of branched, septate, pale brown, smooth-walled hyphae, 1.5–3 μm thick. Conidiophores differentiated, single or in groups, erect, unbranched, straight or flexuous, cylindrical, dark brown to black, smooth, septate, 16–39 × 6.5–9 μm. Conidiogenous cells monoblastic, integrated, terminal, determinate,

lageniform or cylindrical, brown to dark brown, smooth. Conidial secession schizolytic. Conidia holoblastic, solitary, acrogenous, straight or curved, obclavate, smooth-walled, brown to dark brown, 14–21-distoseptate, 122–155 μm long, 4.5–6.5 μm thick in the broadest part, tapered gradually toward the acute apex, 3.5–4.5 μm wide at the truncate base.

Comments – Subramanian established the genus *Ellisembia,* proposing twelve new combinations for twelve species of *Sporidesmium* Link and designating *E. coronata* (Fuckel) Subram. as the type species (Subramanian 1992). Subsequently, Wu & Zhuang (2005) merged *Imicles* Shoemaker & Hambl. (Shoemaker & Hambleton 2001) into *Ellisembia* and expanded the generic concept. *Ellisembia* was mainly characterized by differentiated, single, unbranched, septate conidiophores, and monoblastic, integrated, terminal, lageniform, doliiform or cylindrical, determinate or percurrently extending conidiogenous cells that produce solitary, holoblastic, distoseptate conidia. Assigning species within *Ellisembia* is primarily based on conidial features such as shape, size and septation (Subramanian 1992, Wu & Zhuang 2005, McKenzie 2010).

Our specimen is clearly a species of *Ellisembia* from its conidiophore and conidial morphology. The new species bears some resemblance to *E. britannica* (B. Sutton) W.P. Wu and *E. carrii* (Morgan-Jones) W.P. Wu (Wu & Zhuang 2005) in conidial shape. However, *E. schimae* differs from *E. britannica* (conidia 50–130 × 3–5 μm, 10–13-distoseptate) in its larger conidia with more numerous septa, and from *E. carrii* (conidia 90–130 × 8–10 μm) in having longer and narrower conidia. In addition, conidia of *E. schimae* have an obvious pointed apex, while those of *E. britannica* and *E. carrii* have rounded apices.

Linkosia hibisci Jian Ma & X.G. Zhang, **sp. nov.** Fig. 2

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Fungus anamorphicus. Coloniae in substrato naturali effusae, brunneae. Mycelium superficiale, ex hyphis ramosis, septatis, brunneis vel atrobrunneis, laevibus, 1.5–3 μm crassis compositum. Conidiophora nulla. Cellula conidiogena determinatae, monoblastica, solitaria, simplicia, lageniformia vel ampulliformia, brunnea vel atrobrunnea, laevia, 9–22 × 4–5 μm, ad apicem 4–4.5 μm crassa et truncatae. Conidiorum secessio schizolytica. Conidia holoblastica, solitaria, acrogena, recta vel curvata, obclavata vel obclavata-rostrata, atrobrunnea vel brunnea, laevia, 16–21-distoseptata, 160–210 μm longa, 7.5–9.5 μm crassa, apicem versus ad 1.5–2.5 μm attenuata; cellula apicalis pallide brunnea, rotundata; cellula basalis cylindrica vel conico-truncata, ad basim 2–4.5 μm crassa.

Type: China, Hainan Province: tropical forest of Bawangling, on dead branches of *Hibiscus mutabilis* L. (*Malvaceae*), 8 Dec 2010, J. Ma (**holotype** HSAUP H5199–1; isotype HMAS 146142).

Etymology: in reference to the host genus, *Hibiscus*.

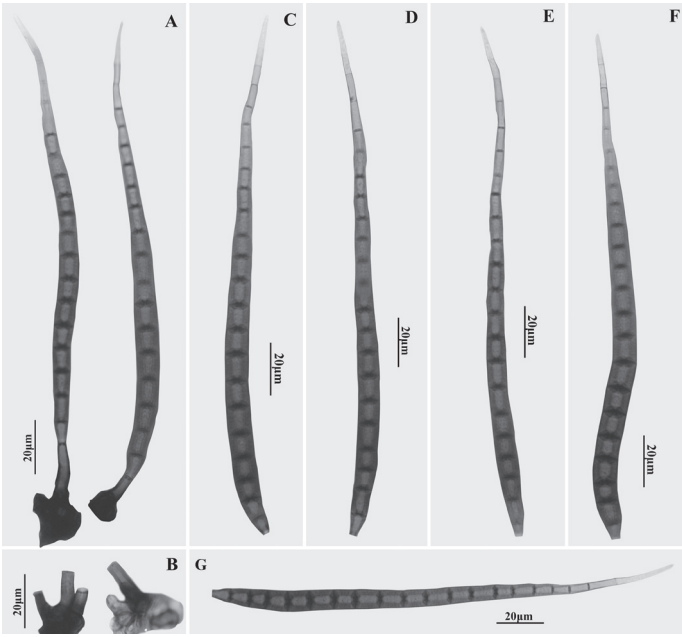

Fig. 2. *Linkosia hibisci.*
A. Conidiogenous cells with conidia. B. Conidiogenous cells. C–G. Conidia.

Anamorphic fungi. Colonies on natural substrate effuse, brown. Mycelium superficial, composed of branched, septate, brown to dark brown, smooth-walled hyphae, 1.5–3 μm thick. Conidiophores absent. Conidiogenous cells determinate, monoblastic, solitary, simple, lageniform or ampulliform, brown to dark brown, smooth, 9–22 × 4–5 μm, 4–4.5 μm wide at the truncate apex. Conidial secession schizolytic. Conidia holoblastic, solitary, acrogenous, straight or curved, obclavate to obclavate-rostrate, dark brown to brown, smooth, 16–21-distoseptate, 160–210 μm long, 7.5–9.5 μm thick in the broadest part, tapering to 1.5–2.5 μm near the apex; apical cells pale brown, rounded; basal cell cylindrical, truncate, 2–4.5 μm wide.

Comments—The genus *Linkosia*, with *L. coccothrinacis* (A. Hern. Gut. & J. Mena) A. Hern. Gut. & B. Sutton as the type species, was characterized by absence of conidiophores, and solitary, simple, short, monoblastic, determinate, lageniform or ampulliform conidiogenous cells producing distoseptate conidia (Hernández-Gutiérrez & Sutton 1997, Wu & Zhuang 2005). These characters separate *Linkosia* from other similar genera including *Stanjehughesia* and *Janetia* M.B. Ellis (Ellis 1976). Six species are currently included in this genus, of

which four have previously been described from China (Hernández-Gutiérrez & Sutton 1997, Wu & Zhuang 2005, Zhang et al. 2009b). All six species are reported to survive saprobically on dead leaves or branches of bamboo.

Of the known species, *Linkosia hibisci* is similar to *L. obclavata* W.P. Wu (Wu & Zhuang 2005) and *L. mori* K. Zhang & X.G. Zhang (Zhang et al. 2009) in conidial shape, but differs in conidial dimensions (*L. obclavata* 122–177 × 12–16 µm, *L. mori* 110–125 × 9–12 µm). Moreover, *L. hibisci* conidia have more septa than those of *L. obclavata* (12-14 distosepta). In addition, the mature conidia of *L. hibisci* are more darkly pigmented than those of the other two species.

Stanjehughesia micheliae Jian Ma & X.G. Zhang, **sp. nov.** Fig. 3

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Fungus anamorphicus. Coloniae in substrato naturali effusae, nigrae. Mycelium superficiale, ex hyphis ramosis, septatis, pallide brunneis vel brunneis, laevibus, 1.5–3 µm crassis compositum. Conidiophora nulla vel brevis, 1–3-septata, brunnea vel atrobrunnea, 11–28 × 4.5–5 µm. Cellula conidiogena monoblastica, determinatae, solitaria, simplicia, lageniformia vel ampulliformia, brunnea vel atrobrunnea, laevia, 4.5–6.5 × 3.5–5 µm, ad apicem 3–4.5 µm crassa et truncatae. Conidiorum secessio schizolytica. Conidia holoblastica, solitaria, acrogena, recta vel curvata, obclavata vel obclavata-rostrata, atrobrunnea vel brunnea, laevia, 13–19-distoseptata, 130–190 µm longa, 7–9 µm crassa, apicem versus ad 2–3 µm attenuata; cellula apicalis rotundata; cellula basalis cylindrica vel conico-truncata, ad basim 3.5–4.5 µm crassa; Appendicibus lateralibus 0–2, brunneae, septata, cylindricae, surgentibus ex cellulla e apicem 2nd vel 3rd.

Type: China, Guangdong Province: Chebaling National Nature Reserve, on dead branches of *Michelia skinneriana* Dunn (*Magnoliaceae*), 16 Oct 2010, J. Ma (**holotype** HSAUP H5414; isotype HMAS146143).

Etymology: in reference to the host genus, *Michelia*.

Anamorphic fungi. Colonies on natural substrate effuse, black. Mycelium superficial, composed of branched, septate, pale brown to brown, smooth-walled hyphae, 1.5–3 µm thick. Conidiophores absent or short, 1–3-septate, brown to dark brown, 11–28 × 4.5–5 µm. Conidiogenous cells monoblastic, determinate, solitary, simple, lageniform or ampulliform, brown to dark brown, smooth, 4.5–6.5 × 3.5–5 µm, 3–4.5 µm wide at the truncate apex. Conidial secession schizolytic. Conidia holoblastic, solitary, acrogenous, straight or curved, obclavate to obclavate-rostrate, dark brown to brown, smooth, 13–19-distoseptate, 130–190 µm long, 7–9 µm thick in the broadest part, tapering to 2–3 µm near the apex; apical cells rounded; basal cell cylindrical, truncate, 3.5–4.5 µm wide; lateral appendages 0–2, brown, septate, cylindrical, arising from the 2nd or 3rd cells from the apex.

Comments – The genus *Stanjehughesia* was established by Subramanian (1992) to accommodate five new combinations from *Sporidesmium*. The

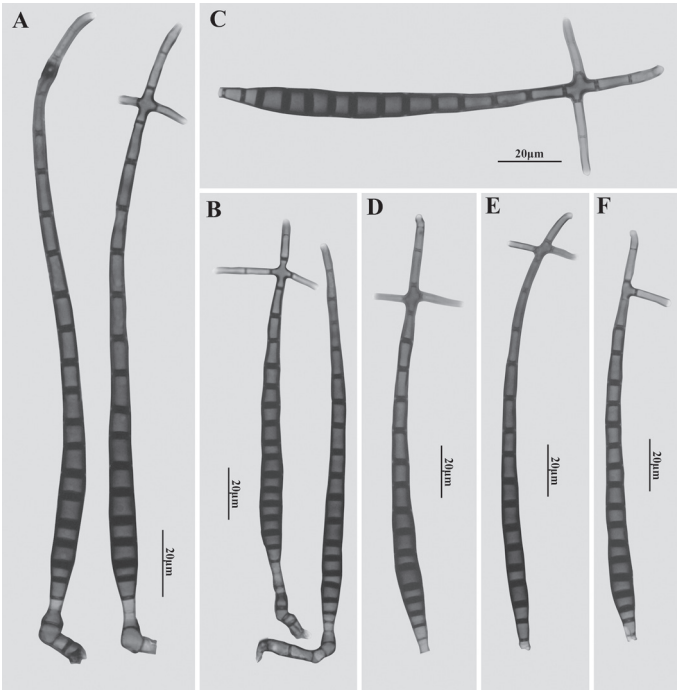

Fig. 3. *Stanjehughesia micheliae*.
A–B. Reduced conidiophores or conidiogenous cells with conidia. C–F. Conidia.

genus is characterized by very reduced or absent conidiophores; determinate, monoblastic, lageniform or ampulliform, solitary, short, simple conidiogenous cells that produce obclavate to obclavate-rostrate, euseptate conidia. Additional species have been described or transferred to *Stanjehughesia* (McKenzie 1995, Mena-Portales et al. 2001, Wu & Zhuang 2005, Delgado 2008, Marincowitz 2008). At present, the genus comprises 11 species, most of which grow as saprobes on rotten wood, dead branches, stems or decaying leaves.

Stanjehughesia micheliae is unique among known species of *Stanjehughesia* by its obclavate to obclavate-rostrate conidia with 0–2 cylindrical appendages arising from the 2nd or 3rd cell from the apex.

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